AC Current Probe
Models SR651 and SR652

User Manual

DESCRIPTION

The Models SR651/SR652 (Catalog #2113.45 and #2113.46) are designed for use in industrial environments. The ergonomic design allows them to easily attach to cables or small bus bars. The "circular" jaws guarantee a very good accuracy and low phase shift. The probes have a measurement range up to 1000Arms continuous and are compatible with any AC voltmeter, multimeter, or other voltage measurement instrument that has the following features: Range and resolution capable of displaying 1mV of output per amp of measured current; voltmeter accuracy of 0.75% or better.

WARNING

The safety warnings are provided to ensure the safety of personnel and proper operation of the instrument. Read the instruction completely.

- Use caution on any circuit: potentially high voltages and currents may be present and may pose a shock hazard.
- Do not use the probe if damaged. Always connect the current probe to the measuring device before it is connected around the conductor
- Do not use on non-insulated conductor with a potential to ground greater than 600V CAT III pollution 2. Use extreme caution when clamping around bare conductors or bus bars.
- Before each use, inspect the probe; look for cracks in housing or output cable insulation.
- Do not use clamp in wet environment or in locations that hazardous gases exist.
- Do not use the probe anywhere beyond the tactile barrier.

INTERNATIONAL ELECTRICAL SYMBOLS

This symbol signifies that the current probe is protected by double or reinforced insulation. Use only factory specified replacement parts when servicing the instrument.

This symbol signifies CAUTION! and requests that the user refer to the user manual before using the instrument.

This is a type A current sensor. This symbol signifies that application around and removal from HAZARDOUS LIVE conductors is permitted.

DEFINITION OF MEASUREMENT CATEGORIES

CAT I: For measurements on circuits not directly connected to the AC supply wall outlet such as protected secondaries, signal level, and limited energy circuits.

CAT II: For measurements performed on circuits directly connected to the electrical distribution system. Examples are measurements on household appliances or portable tools.

CAT III: For measurements performed in the building installation at the distribution level such as on hardwired equipment in fixed installation and circuit breakers.

CAT IV: For measurements performed at the primary electrical supply (<1000V) such as on primary overcurrent protection devices, ripple control units, or meters.

RECEIVING YOUR SHIPMENT

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage.

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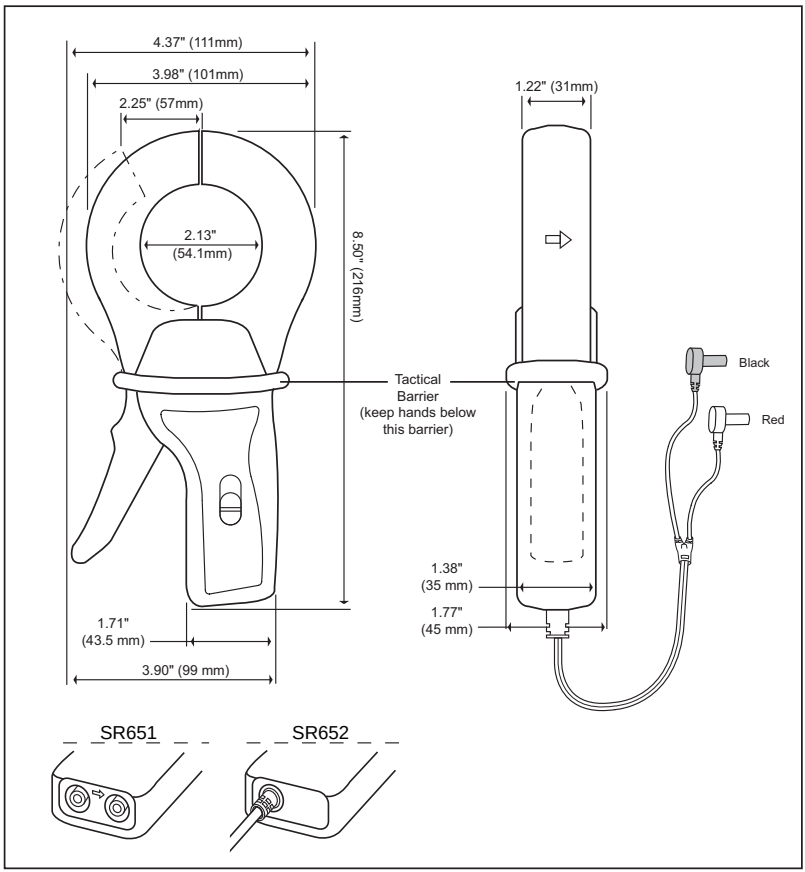
AEMC INSTRUMENTS



ELECTRICAL SPECIFICATIONS

Current Range:
0.1 to 1000A AC, continuous cycle @ ≤ 1kHz

Output Signal:
1mV AC/A AC (1V AC at 1000A)

Accuracy and Phase Shift*:

Primary current	0.1 to 10A	10A	50A
Accuracy %	≤ 3% ± 0.1mV	3%	1.5%
Phase shift	N/A	3°	1.5°

Primary current	200A	1000A	1200A
Accuracy %	.75%	0.5%	0.5%
Phase shift	0.75°	0.5°	0.5°

(*Reference conditions: 23°C ±3°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field <40 A/m, no DC component, no external current carrying conductor, test sample centered.) Load impedance 1MΩ.

Overload: 1200A for 40 mn on, 20 mn off

Accuracy: Per IEC 185

Frequency Range: 30 Hz to 5 kHz; current derating above 1kHz using the formula: $1000\ A \times \frac{1}{F\ (\text{in kHz})}$

Load Impedance: 100kΩ min.

Working Voltage: 600V, CAT III

Common Mode Voltage: 600V, CAT III

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Influence of Adjacent Conductor:
< 1mA/A AC

Influence of Conductor in Jaw Opening:
0.1% of reading

Influence of Frequency:
From 30 to 48Hz : < 1% of R
From 65 to 1000Hz : < 0.5% of R
From 1 kHz to 5kHz : < 1% of R

MECHANICAL SPECIFICATIONS

Operating Temperature:
-14° to 122°F (-10° to 50°C)

Storage Temperature:
-4° to 158°F (-20° to 70°C)

Influence of Temperature:
< 0.1% per 10°K

Influence of Humidity:
From 10 to 90% : 0.1%

Jaw Opening:
2.25" (57mm) max.

Maximum Conductor Size:
2.05" (52mm)

Envelope Protection:
IP 40 (IEC 529)

Drop Test:
1m (IEC 68-2-32)

Mechanical Shock:
100g (IEC 68-2-27)

Vibration:
5 to 15Hz, 0.15mm (IEC 68-2-6)
15 to 25Hz, 1mm
25 to 55Hz, 0.25mm

Polycarbonate Material:
Handles: ABS Grey and
Lexan 500R, Red: UL94V0
Jaws: Lexan 500R, Red : UL94V0

Dimensions:
4.37 x 8.50 x 1.77" (111 x 216 x 45mm)

Weight:
1.21lbs. (550g)

Output:
SR651: Two standard safety banana jacks (4mm)

SR652: 5ft. (1.5m) lead with safety 4mm banana plug

SAFETY SPECIFICATIONS

c UL us LISTED E192383

Electrical:
Double insulation or reinforced insulation between the primary or secondary and the outer case of the handle conforms to IEC 1010-2-032.

Common Mode Voltage:
600V, Category III, Pollution Degree 2

Dielectric Strength:
5550V, 50/60Hz between primary, secondary and the outer case of the handle

Electromagnetic Compatibility:
EN 50081-1 Class B
EN 50082-2 Electrostatic discharge
IEC 1000-4-2
Radiated field IEC 1000-4-3
Fast transients IEC 1000-4-4
Magnetic field at 50/60Hz IEC 1000-4-8

ORDERING INFORMATION

AC Current Probe SR651..... Cat #2113.45
AC Current Probe SR652..... Cat #2113.46

Accessories:
Leads, set of 2, 5 ft. safety (1000V).... **Cat #2111.29**
Banana plug adapter
(to nonrecessed plug) ..... **Cat #1017.45**

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OPERATION

Please make sure that you have already read and fully understand the WARNING section on page 1.

Making Measurements with the AC Current Probe Model SR651/SR652

- Connect the black lead of the current probe to "Common" and the red lead to the AC voltage input on your DMM or other voltage-measuring instrument. The AC current probe has a ratio of 1000:1. This means that for 1000A AC in a conductor around which the probe is clamped, 1V AC will come out of the probe leads to your DMM or instrument. The output is 1mV AC/A AC. Select the range which corresponds to the measured current. If the current magnitude is unknown, start with the highest range and work down until the appropriate range and resolution are reached. Clamp the probe around the conductor. Take the reading on the meter and multiply it by 1000 to obtain the measured current (e.g, 260mV reading = 260 x 1000 = 260,000mA or 260A).
- For best accuracy, avoid if possible, the proximity of other conductors which may create noise.

Tips for Making Precise Measurements

- When using a current probe with a meter, it is important to select the range that provides the best resolution. Failure to do this may result in measurement errors.
- Make sure that probe jaw mating surfaces are free of dust and contamination. Contaminants cause air gaps between the jaws, increasing the phase shift between primary and secondary. It is very critical for power measurement.

MAINTENANCE

Warning:

- For maintenance use only original replacement parts.
- To avoid electrical shock, do not attempt to perform any servicing unless you are qualified to do so.
- To avoid electrical shock and/or damage to the instrument, do not get water or other foreign agents into the probe.

Cleaning: To ensure optimum performance, it is important to keep the probe jaw mating surfaces clean at all times. Failure to do so may result in error in readings. To clean the probe jaws, use very fine sand paper (fine 600) to avoid scratching the jaw, then gently clean with a soft oiled cloth.

REPAIR AND CALIBRATION

You must contact our Service Center for a Customer Service Authorization number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (includes calibration certificate plus recorded calibration data).

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(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
repair@aemc.com

(Or contact your authorized distributor)
Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.
NOTE: All customers must obtain a CSA# before returning any instrument.

TECHNICAL AND SALES ASSISTANCE

If you are experiencing any technical problems, or require any assistance with the proper use or application of this instrument, please call our technical hotline:

(800) 343-1391 • (508) 698-2115 • Fax (508) 698-2118
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